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NOTICE OF ALLOWANCE AND FEE(S) DUE

22801 7590 02/26/2009

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601 W. RIVERSIDE AVENUE
SUITE 1400
SPOKANE, WA 99201

EXAMINER	
DAFTUAR, SAKET K	
ART UNIT	PAPER NUMBER
2451	

DATE MAILED: 02/26/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,400	04/20/2004	**Chuanxiong Guo**	MS1-1960US	4520

TITLE OF INVENTION: PEER-TO-PEER (P2P) MOBILITY SYSTEM, AND METHOD

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1510	$300	$0	$1810	05/26/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

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Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
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INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

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I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)

(Signature)

(Date)

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10/828,400	04/20/2004	Chuanxiong Guo	MS1-1960US	4520

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nonprovisional	NO	$1510	$300	$0	$1810	05/26/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
DAFTUAR, SAKET K	2451	709-230000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1_____

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2_____ 3_____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:

❑ Issue Fee

❑ Publication Fee (No small entity discount permitted)

❑ Advance Order - # of Copies _____

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❑ A check is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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EXAMINER	
DAFTUAR, SAKET K	
ART UNIT	PAPER NUMBER
2451	

DATE MAILED: 02/26/2009

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)

(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 907 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 907 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

Notice of Allowability	Application No.	Applicant(s)	
	10/828,400	GUO ET AL.	
	Examiner	Art Unit	
	SAKET K. DAFTUAR	2451	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *01/27/09*.

2. ☒ The allowed claim(s) is/are *1,4-13,15-16, 18-21, 23, 25, and 27-30*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/S. K. D./
Examiner, Art Unit 2451

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with applicant assigned representative, Mr. Jacob Scott, Registration Number 62,806 on February 9th, 2009.

The application has been amended as follows:

Claim 1. (Currently Amended) An end host comprising:

a memory including:
executable instructions;
storage for respective identifiers for respective peers of the end host in a peer-to-peer system, wherein the storage comprises:
a multilevel routing table cache (MRTC),
each level in the MRTC ~~has~~ includes a maximum number of entries ,
each level in the MRTC represents a segment of a number space corresponding to an identifier of the end host,
the top level of the MRTC spans the entire number space,
each successively lower level ~~contains~~ comprises successively smaller spans,
each said span in a level below the top level is a smaller segment than the entire number space,
each said span is clustered around one said identifier of a corresponding said peer, and
the relative proximity between the peers corresponds to the respective identifiers, ~~thereof;~~ [[and]]
an array for each said peer of the end host , wherein:
each said array [[~~is~~]] includes a neighbor hint table (NHT);
each said array includes one [[~~of~~]] or more entries; and

each said entry corresponds to one neighbor peer of one peer of the end host (NPOP); and

includes an identifier for the NPOP, [[~~and~~]] wherein each said identifier for the NPOP comprises:

an IP address of the respective said NPOP;

a port number of the respective said NPOP; and

an ID generated from a public key of the respective said NPOP, wherein relative proximity between the NPOPs is a function of the proximity of the respective identifiers of the peers;

a processor for executing the executable instructions which, when executed, ~~interacts~~ cause the processor to interact with the end host as a peer in a peer-to-peer fashion in the peer-to-peer system, the interacting comprising:

when a message is ~~to be~~ sent from the end host to a destination, said peer having an identifier not found in the MRTC [[:]], forming a message for a destination ~~said~~ peer for which the identifier thereof is not found in the MRTC, wherein the message includes the identifier of the destination ~~said~~ peer; and

addressing the message to an intermediate said peer for which the identifier thereof[[:]] is in the memory[[;]] and where the intermediate said peer has an address which is ~~the~~ proximally closest to the identifier of the destination said peer;

wherein the executable instructions further comprise an architecture that includes:

logic for a kernel layer~~,~~ wherein the logic for the kernel layer comprises:

an internet protocol (IP) layer comprising an end-to- end mobility module for end communications between the end host and another end host in the peer to peer system; and

a transport layer on the IP layer for communications across interconnected networks of the peer-to-peer system; and

logic for an application layer on the kernel layer and wherein the logic for the application layer comprises:

a name resolution module for resolving said identifier for a respective said peer in the peer-to-peer system to IP address, and storing the identifier of the respective said peers of the end host in the storage; and

a notification module of the name resolution module for storing the identifier for each said NPOP in each said entry in each said array.

Claim 2. (Canceled).

Claim 3. (Canceled).

Claim 4. (Currently Amended) The end host as defined in Claim 1,
wherein the proximally closest ~~said~~ identifier of the intermediate said peer is found in a portion of the memory selected from the group consisting of: one said entry in one said array; and the MRTC.

Claim 5.(Currently Amended) The end host as defined in Claim 1,
Wherein a message ~~can~~ be is delivered to a destination said peer from the end host by transmission via a number of said peers, wherein the number of said peers being no ~~that is not~~ more *than O(lOgk N)* [[in]] on average over time;
k is ~~the~~ a factor by which t-he spans of each said successively lower level is successively smaller; and
N is ~~the~~ a number of said identifiers in an identifier naming space for the MRTC.

Claim 6. (Currently Amended) The end host as defined in Claim 1,
wherein the interaction of the end host as a peer in peer-to-peer fashion in the peer-to-peer system comprises forming a message for delivery to a destination said peer via ~~the~~ one or more neighbor peers ~~thereof~~ of said destination said peer.

Claim 7. (Currently Amended) The end host as defined in Claim 1,
wherein the interaction of the end host as a peer in peer-to-peer fashion in the peer-to- peer system comprises[[:]] addressing a message for transmission to each said NPOP of the peer to which the end host is unable to communicate for further transmission [[~~therefrom~~]] to the peer to which the end host is unable to communicate.

Claim 8. (Currently Amended) The end host as defined in Claim 7,
wherein the message includes a new IP address of the end host when the IP address of the end host ~~has changed~~ changes.

Claim 9. (Original) The end host as defined in Claim 1,
wherein the interaction of the end host as a peer in peer-to-peer fashion in the peer-to-peer system comprises registering one said identifier for the end host with each of the respective peers of the end host in the peer-to-peer system.

Claim 10.(Currently Amended) The end host as defined in Claim 1,

wherein the interaction of the end host as a peer in peer-to-peer fashion in the peer-to-peer system comprises: establishing a communication connection between the end host and one said peer of the end host;

losing the established communication connection for a predetermined time threshold;

receiving a message from the one said peer of the end host ~~containing.~~ wherein the message includes a new IP address of the one said peer ; and

resuming, using the new IP address, the communication connection between the end host and one said peer of the end host.

Claim 11.(Original) The end host as defined in Claim 10,

wherein the message is received via one said NPOP.

Claim 12. (Currently Amended) The end host as defined in Claim 1, wherein relative proximity between the peers in the peer-to-peer system is a function of the proximity of the respective identifiers ~~thereof~~ of the peers.

Claim 13.(Currently Amended) The end host as defined in Claim 1,

wherein: each said identifier of each said peer is a numerical expression; and relative proximity between the peers in the peer-to-peer system corresponds to numerical proximity of the respective identifiers ~~thereof~~ of the peers.

Claim 14. (Cancelled).

Claim 15.(Currently Amended) The end host as defined in Claim 1,

wherein each said identifier of each said peer comprises:

an IP address of the peer; and

an ID generated from a public key of the peer, wherein relative proximity between the peer and other said peers in the peer-to-peer system is a function of the proximity of the respective identifiers ~~thereof~~ of the peers.

Claim 16. (Original) The end host as defined in Claim 1,

wherein the entries in each said array are ordered according to a priority of the NPOP selected from the group consisting of:

available bandwidth of the NPOP; proximity of the NPOP to the corresponding said peer of the end host;

degree of trust between the NPOP and the corresponding said peer of the end host;

probability that the IP address of the NPOP will change; and

a combination of the foregoing.

Claim 17. (Cancelled).

Claim 18. (Currently Amended) The end host as defined in Claim ~~17,~~ 1,
wherein the transport layer on the IP layer is a TCP UDP layer.

Claim 19.(Original) The end host as defined in Claim 1, wherein each said peer in the peer-to-peer system is selected from the group consisting of:
a cellular telephone;
a computing device having a wired connection to the peer to peer system;
and a computing device having a wireless connection to the peer to peer system.

Claim 20.(Original) The end host as defined in Claim 1,
wherein the interaction of the end host as a peer in peer-to-peer fashion in the peer-to-peer system comprises:
receiving updates to the identifier for the NPOP for each entry in each array; and sending an updated IP address for the end host to each peer of the end host.

Claim 21.(Currently Amended) A peer to peer system comprising first and second means for interacting as respective peers in a peer-to-peer fashion in a peer-to-peer system, wherein each said first and second means respectively [[~~has~~]]comprises:

a processing means for interacting in the peer-to-peer system;

one or more close peers in the peer-to-peer system, wherein each said close peer [[~~has~~]]includes one [[~~of~~]] or more neighbor peers (NP);

means for storing one identifier in memory for each of the one or more close peers, wherein the means for storing one identifier for each of the one or more close peers comprises a multilevel routing table cache (MRTC),

wherein each level in the MRTC includes a maximum number of entries,

wherein each level in the MRTC represents a segment of a number space corresponding to an identifier of the respective first and second means,

wherein the top level of the MRTC spans the entire number space, wherein each successively lower level includes successively smaller spans,

wherein each said span in a level below the top level is a smaller segment than the entire number space,

wherein each said span is clustered around one said identifier of a corresponding said close peer, and

wherein the relative proximity between the close peers corresponds to the respective identifiers; [[and]]

means for storing an array for each said close peer, wherein:
each said array [[~~is~~]] includes a neighbor hint table (NHT);
each said array includes one [[of]] or more entries; and
each said entry:
corresponds to one said NP; and
includes an identifier for the NP;
includes an identifier for the NP, wherein each said identifier for the NPOP comprises:
an IP address of the respective said NP;
a port number of the respective said NP; and
an ID generated from a public key of the respective said NP,
wherein relative proximity between the NPs is a function of the proximity of the respective identifiers of the peers;

wherein the first means is a close peer to the[[and]] second means ~~are close peers one to the other;~~

when the IP address of the first means changes ~~so as to cause~~ and there is a break in an on[[ ]]going communication between the first and second means for longer than a predetermined time threshold, each of the first and second means further comprises:
means for addressing a message for transmission to each NP of each close peer of the other of the first and second means for delivery of the message thereto via each NP, wherein the message includes the changed IP address thereof; and
means for:
receiving the message via the NP;
extracting the changed IP address of the other of the first and second means from the message; and
resuming the on[[ ]]going communication using the changed IP address of the other of the first and second means.

wherein the communication between the first and second means further comprise an architecture that includes:
logic for a kernel layer~~,~~ wherein the logic for the kernel layer comprises:
an internet protocol (IP) layer comprising an end-to- end mobility module for end communications between the end host and another end host in the peer to peer system; and
a transport layer on the IP layer for communications across interconnected networks of the peer-to-peer system; and

logic for an application layer on the kernel layer and wherein the logic for the application layer comprises:

a name resolution module for resolving said identifier for a respective said peer in the peer-to-peer system to IP address, and storing the identifier of the respective said peers of the end host in the storage; and

a notification module of the name resolution module for storing the identifier for each said NPOP in each said entry in each said array.

Claim 22.(Canceled)

Claim 23.(Currently Amended) The peer-to-peer system as defined in Claim 21,

wherein, when the IP address of either of the first and second means ~~has changed~~ changes, said either of the first and second means respectively further comprises:

means for addressing a message for transmission to each said NP when communication can [[ ]]not be made, after a predetermined threshold, to the corresponding said close peer,

wherein the message includes the changed IP address; and

means for:

receiving the message;

extracting the changed IP address from the message; and

communicating with the corresponding said close peer using the changed IP address.

Claim 24.(Canceled).

Claim 25.(Original) The peer-to-peer system as defined in Claim 21,

wherein each of the first and second means further comprises:

means for registering an identifier thereof with each of the close peers;

and means for receiving an identifier for each of the NP of each of the close peers.

Claim 26.(Canceled).

Claim 27.(Currently Amended) The peer-to-peer system as defined in Claim [[~~26~~]] 21,

wherein for the first means, when a message is ~~to be~~ sent to a peer in the peer to peer system having an identifier not found in the MRTC of the first means, the first means further comprises:

means for forming a message for a destination said peer for which the identifier thereof is not found in the memory, wherein the message includes the identifier of the destination said peer; and

means for addressing the message to an intermediate said peer for which the identifier thereof[[:]] is in the memory[[;]] of the intermediate said peer, and is the proximally closest to the identifier of the destination said peer.

Claim 28.(Currently Amended) The peer-to-peer system as defined in Claim [[~~27~~]]21,

wherein the proximally closest said identifier of the intermediate said peer is found in a portion of the memory selected from the group consist of: one said entry in one said array; and the MRTC.

Claim 29.(Currently Amended) The peer-to-peer system as defined in Claim [[~~27~~]]21,

wherein: the message ~~can be~~ is delivered to the destination said peer from the first means by transmission via a number of said peers, wherein the number of said peers being no ~~that is not~~ more than O(logk N) in average;

k is ~~the~~ a factor by which the spans of each said successively lower level is successively smaller; and

N is ~~the~~ a number of identifiers in an identifier naming space for the MRTC.

Claim 30.(Original) The peer-to-peer system as defined in Claim 21, wherein each said peer is selected from the group consisting of: a cellular telephone; a computing device having a wired connection to the peer to peer system;

and a computing device having a wireless connection to the peer to peer system.

Claims 31. - 43. (Canceled).

REASON FOR ALLOWANCE

2. The following is an examiner's statement of reasons for allowance: the cited prior arts failed to disclose or suggests the following underlined subject matter:

> a multilevel routing table cache (MRTC), each level in the MRTC includes a maximum number of entries ,each level in the MRTC represents a segment of a number space corresponding to an identifier of the end host, the top level of the MRTC spans the entire number space, each successively lower level comprises successively smaller spans, each said span in a level below the top level is a smaller segment than the entire number space, each said span is clustered around one said identifier of a corresponding said peer, and the relative proximity between the peers corresponds to the respective identifiers, an array for each said peer of the end host , wherein:

each said array includes a neighbor hint table (NHT);
each said array includes one or more entries;
each said entry corresponds to one neighbor peer of one peer of the end host (NPOP); and
includes an identifier for the NPOP, wherein each said identifier for the NPOP comprises:
an IP address of the respective said NPOP;
a port number of the respective said NPOP; and
an ID generated from a public key of the respective said NPOP, wherein relative proximity between the NPOPs is a function of the proximity of the respective identifiers of the peers;

a processor for executing the executable instructions which, when executed, cause the processor to interact with the end host as a peer in a peer-to-peer fashion in the peer-to-peer system, the interacting comprising: when a message is sent from the end host to a destination, said peer having an identifier not found in the MRTC, forming a message for a destination peer for which the identifier thereof is not found in the MRTC, wherein the message includes the identifier of the destination peer; and addressing the message to an intermediate said peer for which the identifier thereof is in the memory and where the intermediate said peer has an address which is proximally closest to the identifier of the destination said peer;

wherein the executable instructions further comprise an architecture that includes:
logic for a kernel layer, wherein the logic for the kernel layer comprises:
an internet protocol (IP) layer comprising an end-to-end mobility module for end communications between the end host and another end host in the peer to peer system; and
a transport layer on the IP layer for communications across interconnected networks of the peer-to-peer system; and

logic for an application layer on the kernel layer and wherein the logic for the application layer comprises:
a name resolution module for resolving said identifier for a respective said peer in the peer-to-peer system to IP address, and storing the identifier of the respective said peers of the end host in the storage; and a notification module of the name resolution module for storing the identifier for each said NPOP in each said entry in each said array.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

CONTACT INFORMATION

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAKET K. DAFTUAR whose telephone number is (571)272-8363. The examiner can normally be reached on 7:00 - 3:30pm M-W.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on 571-272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Saket K Daftuar/
Examiner, Art Unit 2451

/John Follansbee/
Supervisory Patent Examiner, Art Unit 2451